STAT [redacted]

10 June 1966

U. S. Government
Washington, D.C.

Attention: Contracting Officer

Subject: Task Order No. 03(100, 762)65R
Basic Agreement STAT [redacted]

Enclosure: a) Electrophotographic Processing Techniques - Monthly Narrative Report for May 1966, Two (2) copies

Gentlemen:

STAT [redacted] forwards herewith Enclosure a) in accordance with the reporting requirements under Item I of subject Task Order.

We are forwarding three additional copies of the report to the Technical Representative.

If you have any questions on this report, please feel free to contact the writer on STAT [redacted]

Very truly yours,
Original Signed by

STAT [redacted]

Contract Representative

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cc: Technical Representative

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ELECTROPHOTOGRAPHIC PROCESSING TECHNIQUES

STAT CONTRACT NO. [redacted] TASK ORDER NO. 03(100,762)65-R

Monthly Narrative Report - May 1966

A. Current Status of Work

1. Electrical-Chemical Processing

The capability tests and the determination of the best operational procedures for using the CRT contact printer were completed. A simple vacuum film support system was made to replace the pressure bag and clear plastic film support plate previously used. This improved the uniformity in pressure contact between the transparency and copy film and greatly reduced the non-imaging light on the printing plane. The capability tests were for both resolution and density replication. The [redacted] "L" STAT resolution target was copied in the unmodulated mode on 8430 (SO278) film. The chemical processing was done in microdol which contained gold chloride. Viewing was done on a microscope at approximately 300 diameters. It was possible to see the line separation in the seventh group, third element, which indicates a resolution level above 400 cycles per millimeter. Using a 64 density step tablet, it was possible to obtain (in the unmodulated mode) 52 density steps on 8430 (SO278).

Modulation experiments were conducted using Frame No. 46972 from the AFSPPL film supplied by the customer. This frame was selected in order to correct light-struck areas in two large areas on the frame without any loss of detail. It was possible to obtain partial correction for these areas with several combinations of modulation, exposure time, and intensity controls.

Additional correction will be attempted in further experimentation; in particular, by removing the beam splitter which is used for viewing during set-up but not needed during film exposure.

2. Electronic Processing

Activity on this sub-task was limited during this reporting period due to the lack of an adequate [redacted] 9B/24 D2 kinescope and the lack of customer authorization to acquire such a tube. The other [redacted] tube, a 9B/24 Q4, previously obtained (but still only on loan) was found to have sufficient light output. Some system improvements have been made, however, in anticipation of the acquisition of the tube.

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Two techniques were tried to improve the contact between the emulsion sides of negative and copy films and to keep dust particles out. Pressure systems using a pad of GE-RTV-15 were first tried, but electrostatic charges collected dust particles which, in turn, acted as nuclei for Newton rings. In addition, the pad is somewhat sticky and it is hard to remove the film from it. A vacuum system using a thin mylar film mounted on O-ring was then tried with much greater success. The copy film and negative are placed between the mylar and a glass plate. Air is removed through a needle stuck in the O-ring. Over 200 cycles were achieved in an initial test on this system which is similar to that used on the CRT printer ((1) above).

A mixing amplifier was built to permit sharp, positive edge signals to mix with negative mask signals in a planned processor experiment. In addition, an improved kinescope driver amplifier was built to provide sufficient voltage output and bandwidth.

3. Techniques Analysis

Activity was also limited somewhat in this area. The results of the simple processor model on iterative edge processing were verified using the contact printer model. In addition, some analysis of modulation effects on

grey scale steps using apertures of different sizes was initiated to verify the results obtained in microdensitometer traces of prints made using the CRT breadboard printer.

B. Problem Areas Encountered

No new problem areas encountered.

C. Projected Work for Next Month

1. Final Report

Prepare drafts for all sections of final report.

2. Electrical-Chemical Processing

a) Complete processing and modification on selected frames from AFSPPL film. Frames contain such features as light-struck areas, haze, and cloud shadow over regions of different element size and densities.

b) Prepare a series of positive transparencies containing medium and high contrast at several density levels. Prepare a set of density and isodensity traces from selected areas of sample transparencies.

c) Make final processing recommendations.

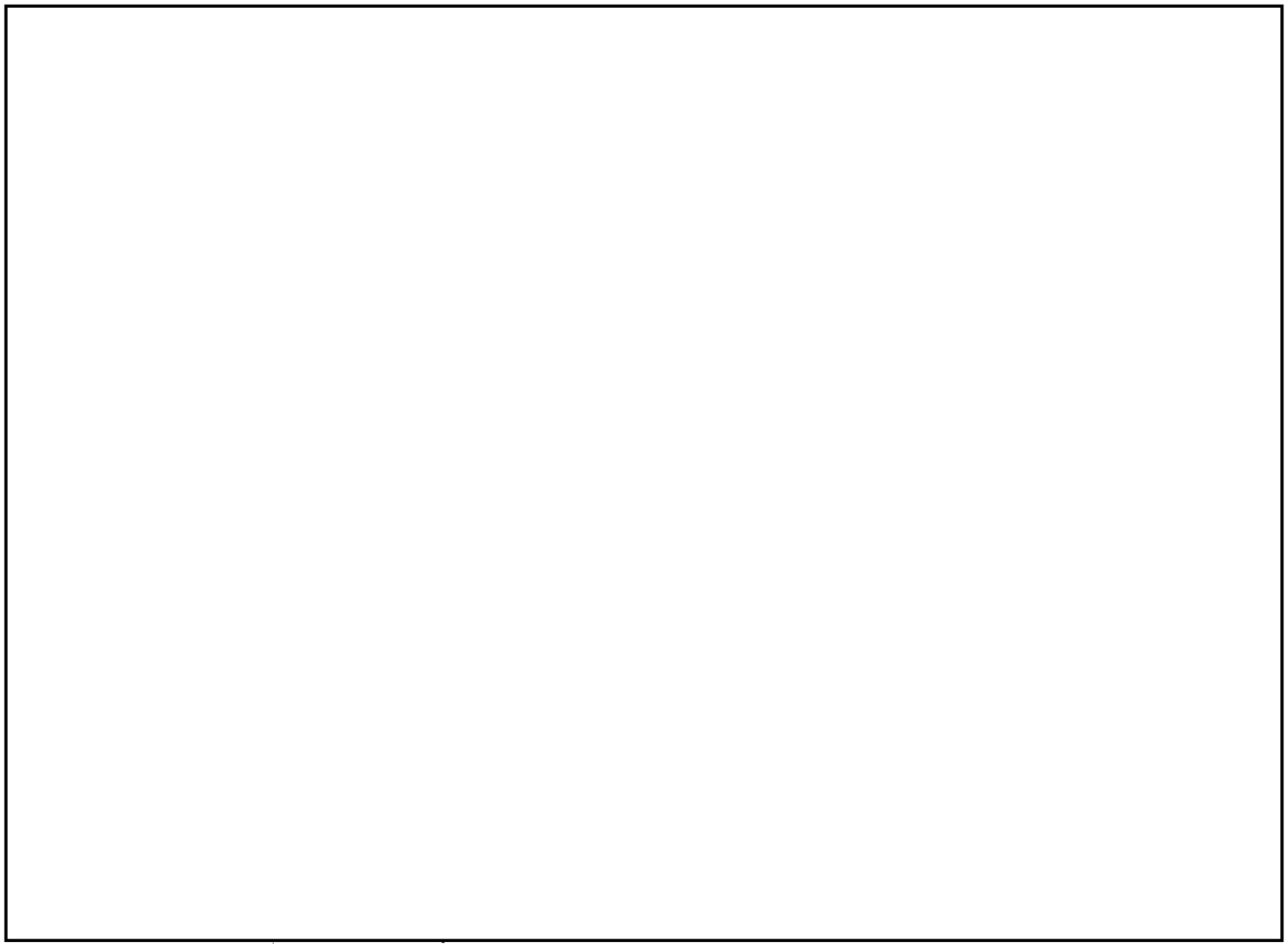
3. Electronic Processing

STAT a) If [redacted] tube becomes available, then it will be incorporated into system and various masking experiments will be performed.

STAT b) If [redacted] tube is not to be acquired, final write up will be made indicating type and goals of experiments that would have been performed.

4. Techniques Analysis

Continue analysis of processing results using modulated light processor models.



E. Documentation of Verbal Commitments and/or Agreements

STAT On May 10, 1966, [ ] requested (in writing) [ ] to cover the purchase STAT
STAT of [ ] tubes required for the electronic processor. This was a confirmation
STAT of an earlier verbal request. [ ] had informed customer on May 5, 1966 that it would reduce the rate of activity but would continue work on the electronic processing sub-task in anticipation of approval to purchase the tubes. The customer agreed to this plan.